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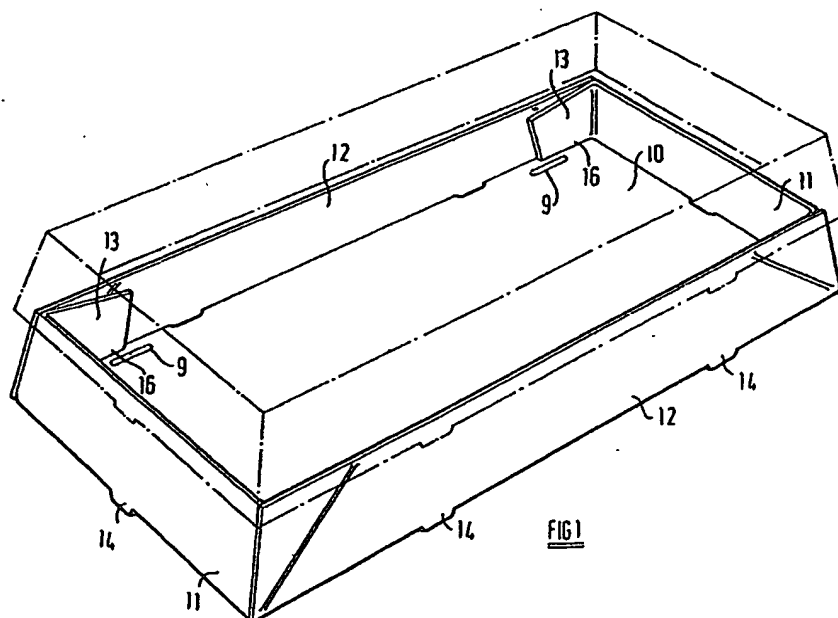
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(54) Stackable trays

(57) A stackable tray, for bakery products for example, is of shallow rectangular form having a base (10)

and walls (11 and 12) tapering inwardly so that the top edges of the walls define a smaller area than the base. Downwardly projecting tabs (14, 15, 20) are struck from the material of the base, preferably near the corners of the tray, and project downwardly along the lower edges of the walls (11 and 12). Corner flaps (13) may have further tabs inserted through slots in the base to abut the tabs (20) struck from the base.



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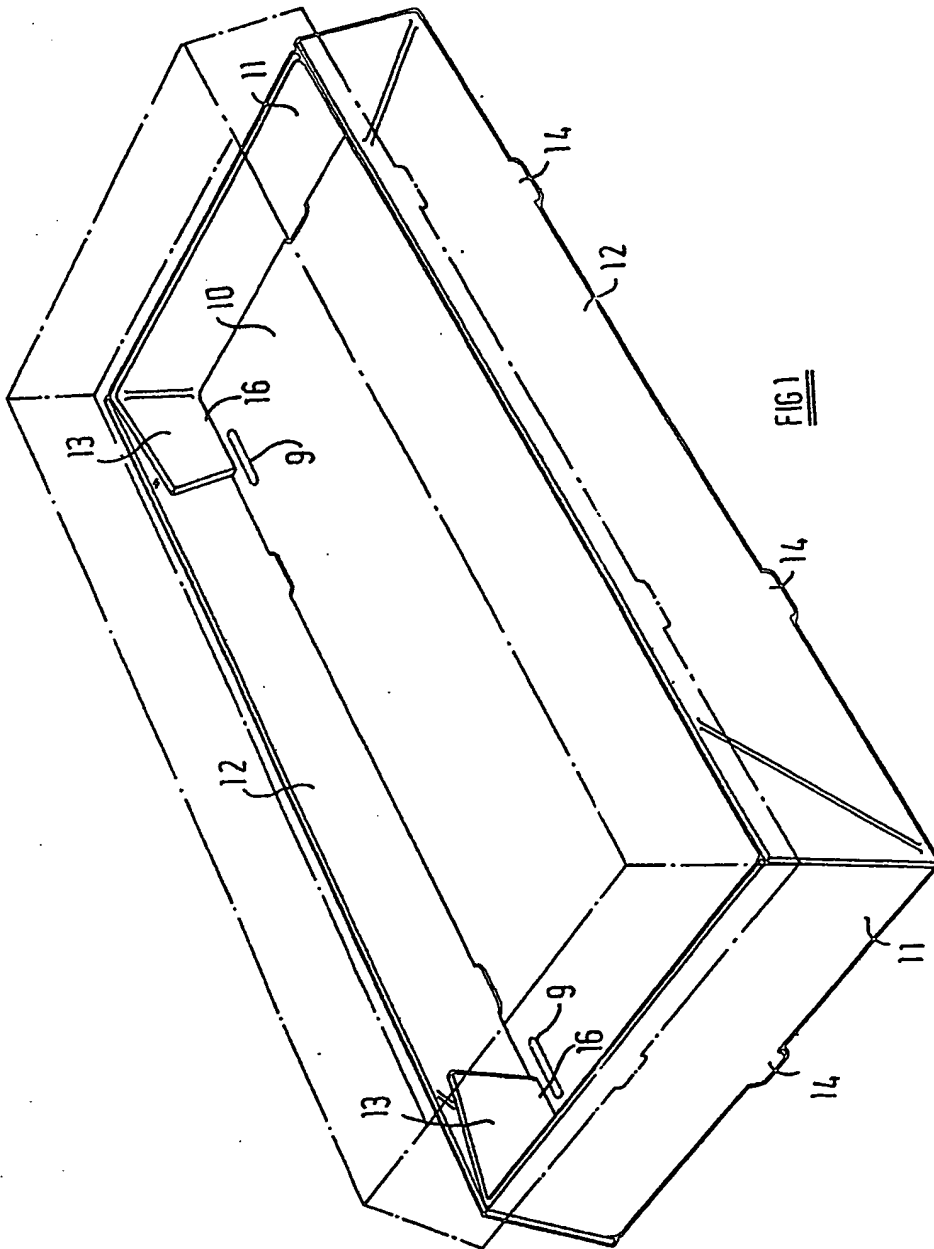
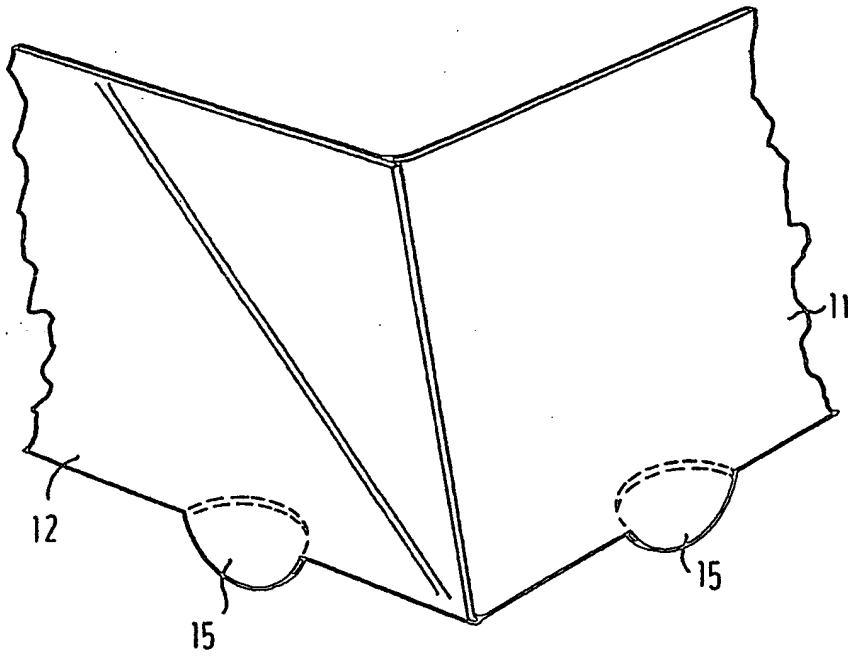
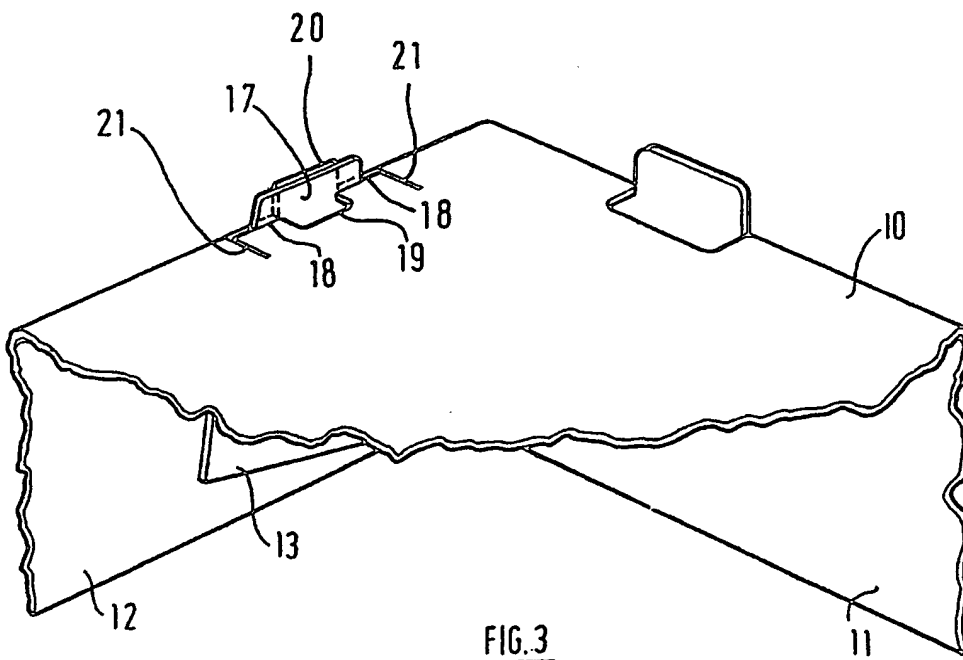
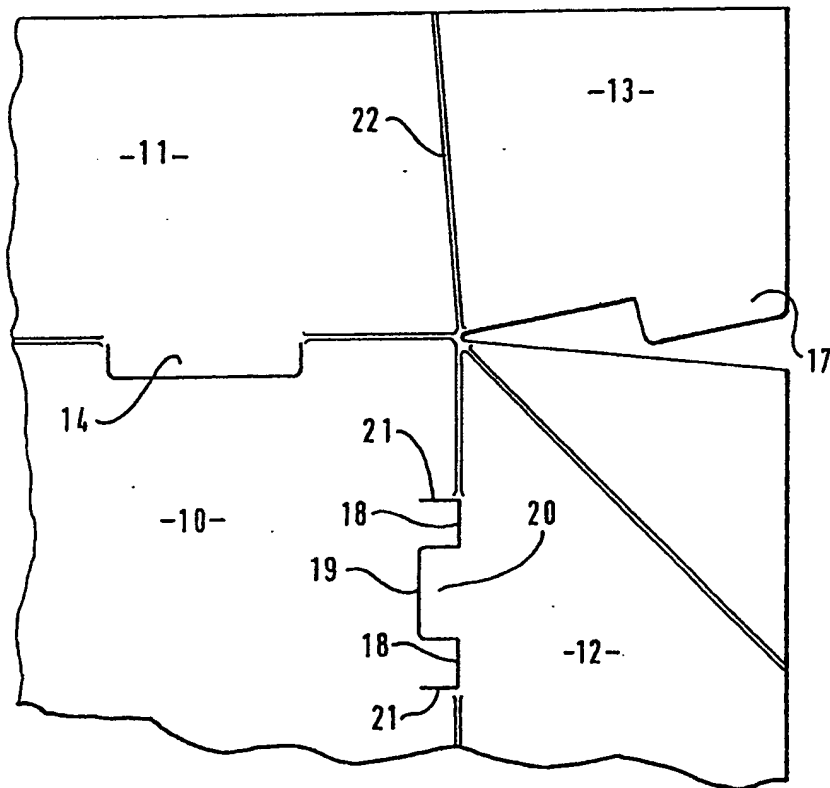


FIG 1

FIG. 2FIG. 3

FIG 4

SPECIFICATION

Improved stackable tray

Description of Invention

This invention relates to stackable trays which may be used, for example, for transporting bakery products such as cakes, buns and the like from the bakery where they are produced to various forms of sales outlets such as shops or restaurants.

Such trays are usually of a shallow rectangular form and are made from cardboard, millboard or similar material, all such materials hereinafter being referred to as "board". The trays conventionally have a flat rectangular base and upstanding side and end walls, the height of which is small relative to the dimensions of the base. Where bakery products are being transported, the trays are intended to stack one upon another in compartments in the transport vehicle. Clearly, it is desirable that this should not cause collapse of the loaded trays which would damage the bakery products. It is also essential that, during movement of the vehicle, the trays should not slide laterally with respect to each other but should remain in a correct stacked position.

There have been proposals to provide such trays having special features of shape and/or special formations on the base and walls to provide some form of location when one tray is stacked upon another to prevent one tray being accidentally displaced transversely relative to the other. In general, such prior proposals require a larger area of board for the blank from which the tray is formed and also have more complicated production techniques than those where the trays are formed from plain rectangular blank and this gives rise to higher production costs. For example, one such prior proposal has had inwardly projecting flanges at the upper edges of the walls with upstanding tabs pressed out from the flanges to locate the base of the tray above, which is supported upon the flanges.

It is an object of the invention to provide an improved stackable tray having means to enable location between adjacent trays stacked one on another without involving any increase, or any significant increase, in the area of board required for the blank, or in the cost of production of the tray.

According to the invention there is provided a stackable tray having a flat base and upstanding walls of a height much less than the dimensions of the base wherein the walls are inclined inwardly so that the area enclosed by the upper edges of the walls is less than the area of the base, and one or more tabs are provided along the lower edge of at least some of the walls and extending downwardly therefrom.

Preferably one or more tabs is provided along the lower edge of each wall.

In the present description, unless the context demands otherwise, the tray will be described in the erected condition.

With arrangement specified, when one such tray is stacked upon another, the base of the

uppermost tray rests on the upper edges of the walls of the tray below and the tabs projecting downwardly from the base of the uppermost tray extend to the outsides of the upper edges of the walls of the tray below and act to prevent the upper tray from being dislodged laterally from its stacked position.

The tabs may be pressed out from the base.

The tray may be rectangular in plan view. The tabs may be provided adjacent the corners of the base.

The tray may include corner flaps, each of which is joined by a fold-line to one wall at a corner of the tray and abuts the inwardly directed face of an adjacent wall.

In this case, one of the tabs may be provided at the lower edge of said adjacent wall at the position of the corner flap.

A further tab may be provided on the corner flap, the further tab contacting said tab face-to-face.

A slit may be provided in the base of the tray at the position of said tab to receive the further tab.

Extension slits may be provided extending from the slit at or adjacent its ends and directed inwardly of the base.

Alternatively, the corner flaps may have lower edges capable of projecting below the level of the base, whereby they have a wedging engagement with the base in the erected condition of the tray.

Upstanding projections may be provided in the base of the tray adapted to retain the flaps in position.

The invention also provides a blank for forming a stackable tray as set out in the foregoing paragraphs.

Certain embodiments of the invention are hereinafter described in detail by way of example, and are illustrated in the accompanying drawings. Reference is also made to certain additional advantageous features which may be associated with the invention.

FIGURE 1 is a perspective view showing two trays in accordance with the invention and in stacked condition;

FIGURE 2 is a scrap view on an enlarged scale showing a modified form of tab;

FIGURE 3 is a scrap view looking at the underside of a tray and showing a further modified form of tab;

FIGURE 4 is a detail of a corner of a blank used to make the tray of Figure 3.

Referring to Figure 1, each of the two trays shown therein has a base 10, end walls 11 and side walls 12 which latter are longer than the end walls 11 so as to provide a rectangular form of tray; it will be observed that the height of the walls 11 and 12 is small compared with the dimensions of the base 10 so that a shallow rectangular form is provided.

Although the tray illustrated is rectangular, the principle of the invention could be applied to trays of different plan shapes.

The tray is formed from a flat rectangular blank by the usual process of slitting at the corners and

folding upwardly to provide the walls 11 and 12 with each end wall 11 being provided with corner flaps 13 which are adhesively secured to the inner surfaces of the side walls 12 when the tray is in a flat folded condition. The tray is supplied to the end user in this condition and can then be erected to the shape shown in Figure 1 for use.

It will be observed that in accordance with the invention, each wall 11 or 12 of the erected tray is inclined inwardly so that the overall area enclosed by the upper edges of the walls 11 and 12 is less than the overall area of the base 10. When one tray is stacked upon another, as shown in Figure 1, the base of the uppermost tray rests upon the upper edges of the walls 11 and 12 of the tray below.

Also in accordance with the invention, in the formation of a tray, tabs 14 are pressed out of the base 10 so as to extend downwardly from the base 10 and in the example shown in Figure 1, each side wall 12 has two such downwardly extending tabs and each end wall 11 has a single downwardly extending tab. Thus, as seen in Figure 1, when one tray is stacked upon another, the downwardly extending tabs 14 of the uppermost tray lie to the outsides of the walls 11 and 12 of the lowermost tray and act to prevent the uppermost tray becoming accidentally dislodged from its position.

It will be observed that the tabs 14 are of relatively shallow depth so as to avoid any substantial projection of tab which might get damaged during the passage of the blank through automatic machinery for forming and erecting the tray.

Figure 2 shows an alternative form of pressed-out tab, the tab 15 here being of part-circular form. Figure 2 also shows a preferred position for each of the tabs 15 on a side wall 12 of the tray, the tab 15 being positioned so that it extends downwardly from the end portion of the side wall 12 which is in face-to-face engagement with the flap 13 extending from the end wall 11. This position gives the area of greatest rigidity for the side wall 12 and there is less tendency for inwards or outwards flexing of a side wall 12 at this end position.

Also shown in Figure 2, each end wall 11 may have two tabs 15 each being positioned near the corner of the tray to impart rigidity.

In order to increase the rigidity of the tray in the corner regions, each flap 13 may in generally known manner be formed so that its lower edge 16 would, but for the presence of the base 10, be below the lower edge of the side wall 12 with the result that when the tray is formed up, the lower edges 16 of the flaps 13 are each forced into wedging engagement with the base 10 and thus serve to increase the rigidity of the corner region.

Small upstanding ribs may be provided in the base as shown at 9 to lodge the flaps more firmly in their final positions in the erected tray.

In this manner, the trays are so formed as to reduce the risk of their collapsing when stacked one on another, with possible damage to the

bakery goods being carried.

Alternatively as shown in Figure 3 and 4, each corner flap 13 may have its lower edge provided with a downwardly presented further tab 17

which passes through narrow slits 18 formed in the base 10 at each end of the rectangular opening 19 from which the locating tab 20 has been pressed out from the base 10. The slits 18 may have extensions 21 at their ends to enable locking engagement to be made more easily.

With this arrangement, the further tab 17 is located in the slits 18 and prevented from being pressed inwardly by its engagement with the shoulders presented by the slits 18, thus enhancing the rigidity of the corner region.

Since the further tab 17 and the tab 20 are positioned face-to-face, each assists in supporting the other. The tab 20 is prevented from being displaced inwardly into the rectangular opening 19 from which it was formed, by the intervening further tab 17 passing through the slits 18.

In the foregoing embodiments, the tabs 14, 15, 20 have been formed by pressing out material which would otherwise form part of the base of the tray. However, it is feasible to form the tabs from material which would otherwise form part of a wall of the tray or solely from corner flaps used to assemble the tray and these constructions are to be regarded as within the scope of the invention.

The size of blank used to make the tray is determined by the positions of the parts of the blank which form the upper edges of the walls. No tabs or extra flanges need be provided on these upper edges, enabling the minimum of board to be used for making the tray and reducing scrap. In the Figure 3 embodiment, for example, the tray is formed from a rectangular blank, shown in Figure 4. The fold-line 22 attaching the corner flap 13 to the wall 11 is not perpendicular to the fold between the base 10 and the wall, to allow for the inward taper of the walls 11 and 12. This permits the further tab 17 to be cut below the flap 13 without encroaching on the material of the wall 12.

CLAIMS

1. A stackable tray having a flat base and upstanding walls of a height much less than the dimensions of the base wherein the walls are inclined inwardly so that the area enclosed by the upper edges of the walls is less than the area of the base, and one or more tabs are provided along the lower edge of at least some of the walls and extending downwardly therefrom.

2. A tray according to Claim 1 wherein one or more tabs is provided along the lower edge of each wall.

3. A tray according to Claim 1 or Claim 2 wherein the tabs are pressed out from the base.

4. A tray according to any preceding claim which is rectangular in plan view.

5. A tray according to any preceding claim wherein the tabs are provided adjacent the corners of the base.

6. A tray according to Claim 5 and including corner flaps, each of which is joined by a fold-line to one wall at a corner of the tray and abuts the inwardly directed face of an adjacent wall.
- 5 7. A tray according to Claim 6 wherein one of said tabs is provided at the lower edge of said adjacent wall at the position of the corner flap.
8. A tray according to Claim 7 wherein a further tab is provided on the corner flap, the further tab
- 10 contacting said tab face-to-face.
9. A tray according to Claim 8 wherein a slit is provided in the base of the tray at the position of said tab to receive the further tab.
- 15 10. A tray according to Claim 9 wherein extension slits are provided extending from said slit at or adjacent its ends and directed inwardly of the base.
11. A tray according to Claim 6 wherein the corner flaps have lower edges capable of
- 20 projecting below the level of the base, whereby they have a wedging engagement with the base in the erected condition of the tray.
12. A tray according to Claim 11 wherein
- 25 upstanding projections are provided in the base of the tray adapted to retain the flaps in position.
13. A blank for forming a stackable tray according to any preceding claim.
14. A stackable tray substantially as
- 30 hereinbefore described with reference to and as illustrated in Figure 1 of the accompanying drawings.
15. A stackable tray substantially as
- hereinbefore described with reference to and as illustrated in Figure 1 as modified by Figure 2 of
- 35 the accompanying drawings.
16. A stackable tray substantially as
- hereinbefore described with reference to and as illustrated in Figure 1 as modified by Figures 3 and
- 40 4 of the accompanying drawings.
17. A blank for forming a stackable tray according to Claim 13 and substantially as
- hereinbefore described.
18. Any novel feature or novel combination of
- 45 features disclosed herein and/or illustrated in the accompanying drawings.